

FLEXURAL STRENGTH COMPARISON OF MONOLAYER
RESIN COMPOSITE TO BILAYER
RESIN/ LINER COMPOSITE

by

Mai Azzam

Submitted to the Graduate Faculty of the School of
Dentistry in partial fulfillment of the requirements
for the degree of Master of Science in Dentistry,
Indiana University School of Dentistry, 2009.

Thesis accepted by the faculty of the Department of Restorative Dentistry, Indiana University School of Dentistry, in partial fulfillment of the requirements for the degree of Master of Science in Dentistry.

Joseph Legan

Carl Andres

David Brown

Burak Taskonak

Jeffrey A. Platt
Chair of the Research Committee

John Levon
Program Director

Date _____

ACKNOWLEDGMENTS

It is a pleasure to acknowledge the advice and assistance of people who helped me during my study.

First, I would like to offer my sincere and warm appreciation to my supervisor, Dr. Platt, for giving me the idea for my project, and who patiently read and corrected my manuscript as he guided me through the preparation of this thesis.

I would like to thank Dr. Taskonak for all his help in analyzing the data and for supporting me. Special thanks to my professor, Dr. Andres, for all his help and encouragement. Also, I am very appreciative of Dr. Richard J. Mitchell for his help in reviewing the thesis.

I am grateful to my friend Barbara Jarjoura, who helped me during my stay in Indianapolis by giving moral support and encouragement.

On a more personal note, I am deeply indebted to my husband, Abdallah, for helping me to reach this stage, despite his heavy preparation for exams. Also, my thanks to my lovely daughters, Sara, Layla, and Ayah, who coped with my desire to undertake completion of this thesis.

To my father, brothers, and sisters, thank you for all the encouragement and support “across the miles.”

Lastly, I thank my mother, who passed away during my study, but her spirit is here, pushing and supporting me.

TABLE OF CONTENTS

Introduction.....	1
Review of Literature.....	4
Methods and Materials.....	12
Results.....	17
Tables and Figures.....	20
Discussion.....	35
Summary and Conclusions.....	40
Appendix.....	42
References.....	45
Abstract.....	53
Curriculum Vitae	

LIST OF ILLUSTRATIONS

TABLE I	Materials used	21
TABLE II	Elastic modulus and Poisson's ratio values of materials tested...	22
TABLE III	Flexural strength values after 24 h and 30 d	23
FIGURE 1	Groups stored for 24 h	24
FIGURE 2	Groups stored for 30 d	24
FIGURE 3	The resin composite (Tetric EvoCeram) used in all groups	25
FIGURE 4	Vitrebond LC liner	26
FIGURE 5	GC Fuji Lining LC	27
FIGURE 6	Tetric EvoFlow	28
FIGURE 7	Split mold	29
FIGURE 8	BD Tuberculin Syringe with slip tip	30
FIGURE 9	MTS machine with three-point bending fixture	31
FIGURE 10	Flexural strength comparison 24-h groups vs. 30-d groups ...	32
FIGURE 11	Three-point bending fixture	33
FIGURE 12	Transformed beam	34